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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/091,350  | 03/06/2002  | Stefan Wilhelm       | LINDE-581           | 7250             |
| 23599   | 7590        | 06/16/2006           | EXAMINER            |                  |
| MILLEN, WHITE, ZELANO & BRANIGAN, P.C.<br>2200 CLARENDON BLVD.<br>SUITE 1400<br>ARLINGTON, VA 22201 |             |                      | CIRIC, LJILJANA V   |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 3753                |                  |

DATE MAILED: 06/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/091,350

Applicant(s)

WILHELM ET AL.

Examiner

Ljiljana (Lil) V. Ciric *LVC*

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 3/31/2006 *LVC 6-12-06*
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) none is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 and 19-23 is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-16 and 18 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 August 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### DETAILED ACTION

1. In view of the Appeal Brief filed on March 31, 2006, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:



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Eric Keasel,

SPE, AU 3753.

### *Claim Objections*

2. Claim 14 is objected to because of the following informalities: the order of the second and the third paragraphs of claim 14 should be switched in order to provide proper antecedent basis for the securing means recited in line 6 of the claim and improve the readability of the claim. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claim Rejections - 35 USC § 103***

4. Claims 1 through 8, 10 through 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masai et al (previously of record) in view of McKenna.

Masai et al. [especially Figures 6 through 8] discloses a regenerative heat exchanger core or block within a frame including pipes 22a and 22b connected to the block or core 12', and further including securing means readable on elements 62, 64, 66, 68, 70, 72, and 74 which permit thermally produced changes in the lengths of the pipes 22a and 22b connected to the block or core 12' as well thermally produced changes in the size of the heat exchanger core or block 12' to be compensated for by the movement of the heat exchanger block or core 12' in all three spatial directions. While the securing means disclosed by Masai et al. are not identical in structure, they function in the same manner and produce the same effects as the claimed effects of the instant invention and are thus considered by the examiner as being equivalents for the securing means as recited in the claims of the instant application.

While Masai et al. does not disclose the heat exchanging block or core 12' as being disposed in an insulating vessel, it is known in the art and taught by McKenna to have a regenerative heat exchanger disposed and mounted in an insulated housing as shown in Figure 11 of McKenna, for example, in order to improve the efficiency and safety of the heat exchanger system.

Furthermore, while Masai et al. does disclose that a plurality of heat exchanger cores or blocks 12' may be disposed within the same system and connected to a common connection line, Masai et al. does not disclose per se there being specific numbers of heat exchanger blocks arranged in particular row and column arrays as cited in claims 15 and 16, for example. Nevertheless, rearrangement of parts and

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duplication of parts, absent unexpected and/or critical results, is a matter of obvious design choice and is not inventive.

Thus, it would have been obvious to one skilled in the art at the time of invention to modify the regenerative heat exchanger of Masai et al. by specifically enclosing it in an insulative enclosure in order to improve the efficiency of the system and prevent operators from being unnecessarily exposed to temperature extremes. Similarly, it would have been obvious to provide any number of heat exchanger blocks or cores 12', arranged in any desirable row configuration, in order to meet specific system heat transfer requirements within a given set of spatial constraints.

***Allowable Subject Matter***

5. Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. Claims 9 and 19 through 23 are allowed.

***Conclusion***

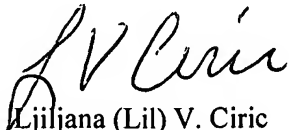
7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ljiljana (Lil) V. Ciric whose telephone number is 571-272-4909. The examiner can normally be reached on Mondays through Fridays from 10:00 a.m. to 6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Keasel, can be reached at 571-272-4929.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC)  
at 866-217-9197 (toll-free).



Ljiljana (Lil) V. Ciric  
Primary Examiner  
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